

signature encryption key and erasing each such instance.

REMARKS

Claims 1, 3, 4, 6-11, 13-15, 28-34, and 38-49 are in this application. Claims 28-30 and 32-34 are allowed and claims 5, 9, 35, 36, and 39-41 were indicated to contain allowable subject matter, claims 35 and 35 on condition of amendment to overcome a rejection under 35 U.S.C. 112. By this amendment, claims 2, 5, 12, 16, 19-27, and 37 have been canceled; claims 1, 3, 9, 13, 31, 35, 36, and 38-41 have been amended; and claims 42-~~47~~<sup>49</sup> have been added. Re-examination, reconsideration and allowance of this application is respectfully requested. No new matter is added.

The amendment of claim 1 incorporates the limitations of the canceled claims 2 and 5, and the limitations of claim 1 that are believed have resulted in the indication of allowable subject matter of claim 5. Claim 9 has been rewritten in independent form to incorporate the limitations of claims 1 and 12 as originally presented. The amendment of claim 13 supplies missing punctuation. Claims 35 and 36 have been amended to provide proper antecedent basis for "each line segment" and "the line segments", respectively. Claims 31 and 38 have been amended to depend from claims 41 and 40, respectively. Claims 39-41 have been rewritten in independent form to include the limitations of 37 that are believed to have resulted in the indication of allowable subject matter, claim 39 also incorporating the limitations of the previously intervening claim 38.

The new claim 42 corresponds to claim 8, but is dependent on claim 9; new claims 43 and 44 correspond to claims 14 and 15 but are dependent on claim 9. The new claims ~~45-47~~<sup>47-49</sup> have limitations originally present in the canceled claim 37, being dependent on claims 39-41, respectively.

REJECTION UNDER 35 U.S.C. 112

Claims 35 and 36 were rejected under 35 U.S.C. 112, second paragraph as having lack of antecedent basis for "each line segment[s]" and "the line segment", respectively. These claims have been amended to recite "for displaying the electronic signature as sequential line segments; . . ." thereby providing proper antecedent basis. Accordingly, Applicants respectfully request allowance of claims 35 and 36

REJECTIONS UNDER 35 U.S.C. 103

Claims 1-4, 6-11, 13-16, 19-27, 31, 37, and 38 were rejected under 35 U.S.C. 102(b) [sic 103] as being unpatentable over Beatson et al variously in view of the Fischer, Romney et al., Howbrook, Kapp et al., and Sudia references. It is believed that these rejections are no longer appropriate in view of the amendments incorporating the limitations of claims 2 and 5 in claim 1; incorporating the limitations of claim 12 in claim 9, and changing the dependencies of claims 31 and 38 to be on claims 41 and 40, respectively; withdrawal thereof and allowance of these claims is respectfully requested.

NEW CLAIMS

*MD* Allowance of new claims <sup>49</sup>42-~~47~~ is requested based on allowance of claims 9 and 39-41 from which they depend, and because they further limit allowable subject matter.

*MD* In view of the above, it is believed that this application, including each of the claims 1, 3, 4, 6-11, 13-15, 28-36, and <sup>49</sup>38-~~47~~, is in condition for allowance. Such allowance is

respectfully requested. If for some reason the Examiner considers otherwise, it is respectfully requested that a telephone call be placed to the undersigned so that issuance of a patent can be expedited.

Respectfully submitted,

SHELDON & MAK

Date: 12 July 2001 By

Stephen R. Seccombe  
Stephen R. Seccombe  
Reg. No. 31,136

290 North "D" Street, Suite 503  
San Bernardino, California 92401  
(909) 889-3649



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CLAIM AMENDMENTS

a1

1. (Amended) A system for managing handwritten signatures, comprising:

(a) a graphic tablet for signaling position coordinates of a stylus during manual movement thereof relative to a writing surface;

(b) a clock circuit for periodically initiating position measurements by the graphic tablet at predetermined fixed time intervals;

(c) a first computer processor electrically interfaced with the tablet, the processor being programmed for receiving a multiplicity of the coordinates during the manual movement of the stylus, and storing respective sets of the coordinates in sequential order as an electronic signature while preserving a time relation between coordinates, the electronic signature forming a time history of the stylus movement; and

(d) means for [verifying the fixed time intervals of the measurements] comparing the electronic signature with a reference signature, comprising the computer processor having a graphic display implemented for simultaneously displaying the electronic signature and the reference signature with corresponding cursors being positioned along a line segment of the signature and oriented perpendicular to the line segment, and the computer being further implemented for moving the cursors in response to operator input.

alal

3. (Twice amended) The system of claim [2] 1, wherein the means for comparing further comprises reference memory for storing an electronic counterpart of the reference signature, and a cross-correlator for evaluating a degree of correspondence between respective time histories of the electronic signature and the electronic counterpart of the reference signature.

ald

9. (Amended) [The system of claim 1, wherein the graphic tablet includes the clock circuit] A system for managing handwritten signatures, comprising:

(a) a graphic tablet for signaling position coordinates of a stylus during manual movement thereof relative to a writing surface;

(b) a clock circuit in the graphic tablet for periodically initiating position measurements by the graphic tablet at predetermined fixed time intervals;

(c) a first computer processor electrically interfaced with the tablet, the processor being programmed for receiving a multiplicity of the coordinates during the manual movement of the stylus, and storing respective sets of the coordinates in sequential order as an electronic signature while preserving a time relation between coordinates, the electronic signature forming a time history of the stylus movement; and

(d) means for verifying the fixed time intervals of the measurements, comprising the computer being programmed for determining a ratio of a total elapsed time of the measurements and a total number of the measurements, and comparing the ratio with the predetermined interval.

a1d3

13. [Amended] The system of claim 9, wherein the means for verifying the time intervals comprises:

(a) the clock circuit having a certified unalterable time interval;

(b) the tablet being implemented for transmitting an encoded certification stamp with the coordinate data; and

(c) the computer being programmed for decoding the certification stamp to verify use of the certified time interval.

m5c2

31. (Amended) The method of claim [19] 41, comprising the further step of encapsulating the electronic signature in a digital signature.

a3

35. (Amended) A system for managing handwritten signatures, comprising:

(a) a graphic tablet for signaling position coordinates of a stylus during manual movement thereof relative to a writing surface;

(b) a computer processor electrically interfaced with the tablet, the processor being programmed for receiving a multiplicity of the coordinates during the manual movement of the stylus, and storing respective sets of the coordinates in sequential order as an electronic signature while preserving a time relation between coordinates, the electronic signature forming a time history of the stylus movement, the computer processor having a graphic display implemented for displaying the electronic signature as sequential line segments; and

(c) the computer processor being further implemented for determining a stylus velocity associated with each line segment, and displaying the line segments at widths being proportional to the stylus velocity.

a4

36. (Amended) A system for managing handwritten signatures, comprising:

(a) a graphic tablet for signaling position coordinates and stylus pressure data of a stylus during manual movement thereof relative to a writing surface;

(b) a computer processor electrically interfaced with the tablet, the processor being programmed for receiving a multiplicity of the coordinates and the stylus pressure data during the manual movement of the stylus, and storing respective sets of the coordinates with the stylus pressure data in sequential order as an electronic signature, the electronic signature forming a time history of the stylus movement and pressure, the computer processor having a graphic display implemented for displaying the electronic signature as sequential line segments; and

(c) the computer processor being further implemented for displaying the line segments at widths being proportional to the stylus pressure data.

M5

37. (Canceled) A method for electronically signing a document, comprising the steps of:

(a) capturing a handwritten signature as a sequence of data corresponding to coordinates of stylus movement producing the signature;

(b) storing the data as an electronic signature;

(c) creating a signature receipt as a cryptographic hash function or message digest of the electronic signature;

(d) creating a signature encryption key by generating a cryptographic hash function or message digest of a stored counterpart of the document;

(e) encrypting the electronic signature using the signature encryption key;

(f) creating a document receipt as a cryptographic hash function or message digest of a stored counterpart of the document;

(g) producing counterparts of the signature and document receipts;

(h) identifying stored instances of the signature encryption key; and

(i) erasing each stored instance of the signature encryption key.

m5b1

38. (Amended) The method of claim [37] 40, comprising the further step of encapsulating the signature and document receipts in a digital signature.

M5a1

39. (Amended) A method for authenticating a document having been signed [according to the method of claim ?,] by a method comprising capturing a handwritten signature as a sequence of data corresponding to coordinates of stylus movement producing the signature, storing the data as an electronic signature, creating a signature receipt as a cryptographic hash function or message digest of the electronic signature, creating a signature encryption key by generating a cryptographic hash function or message digest of a stored counterpart of the document, encrypting the electronic signature using the signature encryption key, creating a document receipt as a cryptographic hash function or message digest of a stored counterpart of the document, producing counterparts of the signature and document receipts, and encapsulating the signature and document receipts in a digital signature, the method comprising the further steps of:

- (a) transmitting the digital signature containing the signature and document receipts to a signer of the document;
- (b) recalling the transmitted digital signature
- (c) extracting the signature and document receipts from the digital signature;
- (d) recovering the electronic signature and a stored counterpart of the document;
- (e) generating new signature and document receipts from the recovered electronic signature and the stored counterpart of the document; and
- (f) comparing the recovered signature and document receipts with the new signature and document receipts, the document being authenticated when respective receipt counterparts are matching.

M5b

40. (Amended) A method for authenticating a document having been signed [according to the method of claim 37,] by a method comprising capturing a handwritten signature as a sequence of data corresponding to coordinates of stylus movement producing the signature, storing the data as an electronic signature, creating a signature receipt as a cryptographic hash function or message digest of the electronic signature, creating a signature encryption key by generating a cryptographic hash function or message digest of a stored counterpart of the document, encrypting the electronic signature using the signature encryption key, creating a document receipt as a cryptographic hash function or message digest of a stored counterpart of the document, and producing counterparts of the signature and



document receipts, the method comprising the further steps of:

- (a) distributing plural counterparts of the signature and document receipts to signers of the document;
- (b) recalling the distributed signature and document receipts; and
- (c) comparing the recalled signature receipts and the document receipts, the document being authenticated when respective receipt counterparts are matching.

M5c

41. (Amended) A method for authenticating a document having been signed [according to the method of claim 37,] by a method comprising capturing a handwritten signature as a sequence of data corresponding to coordinates of stylus movement producing the signature, storing the data as an electronic signature, creating a signature receipt as a cryptographic hash function or message digest of the electronic signature, creating a signature encryption key by generating a cryptographic hash function or message digest of a stored counterpart of the document, encrypting the electronic signature using the signature encryption key, creating a document receipt as a cryptographic hash function or message digest of a stored counterpart of the document, and producing counterparts of the signature and document receipts, the method comprising the further steps of:

- (a) delivering the signature and document receipts to a signer of the document;
- (b) recalling the signature and document receipts;
- (c) recovering the electronic signature and a stored counterpart of the document;
- (d) generating new signature and document receipts from the recovered electronic signature and the stored counterpart of the document; and
- (e) comparing the recalled signature and document receipts with the new signature and document receipts, the document being authenticated when respective receipt counterparts are matching.

A1d4

42. (New) The system of claim 9, wherein the first computer processor is a digital processor, and the electronic signature is a digital signature.

a1d5

43. (New) The system of claim 9, wherein the computer is further programmed for encrypting the time history to a fixed key of arbitrary length, the stored electronic signature being in encrypted form.





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44. (New) The system of claim 43, wherein the computer is programmed for generating the key as a cryptographic hash function or message digest of the document.

Alf

45. (New) The system of claim 1, wherein the computer processor is further implemented for determining a stylus velocity associated with each line segment, and displaying the line segments at widths being proportional to the stylus velocity.

Alg

46. (New) The system of claim 1, wherein the computer processor is programmed for displaying the line segments at widths being proportional to the stylus pressure data.

M5a1a

47. (New) The method of claim 39, comprising the further steps of identifying stored instances of the signature encryption key and erasing each such instance.

m5b1

48. (New) The method of claim 40, comprising the further steps of identifying stored instances of the signature encryption key and erasing each such instance.

m5c1

49. (New) The method of claim 41, comprising the further steps of identifying stored instances of the signature encryption key and erasing each such instance.

